CEMBUREAU
The European Cement Association

EU ETS : INDIRECT COMPENSATION

OBSERVATIONS BY CEMBUREAU, THE EUROPEAN CEMENT ASSOCIATION

I. INTRODUCTION

CEMBUREAU, the European Cement Association, hereby comments on the Draft "*Guidelines on certain State aid measures in the context of the system for greenhouse gas emission allowance trading post 2021*" (hereinafter the "Draft Guidelines"). The Draft Guidelines were accompanied by an Explanatory note and by a Consultant Report under the title "*Combined retrospective evaluation and prospective impact assessment support study on Emission Trading System (ETS) State Aid Guidelines*" (hereinafter the "Consultant Report").

These documents were published by the European Commission following the submission, including by the cement sector, of a file arguing eligibility under the indirect compensation regime.

II. PROCEDURAL REMARK

As a preliminary remark, it is important to note that the Consultant Report refers to sector fiches which include the analysis per sector of the parameters to determine eligibility for indirect compensation. While the Consultant's Report states on its page 18 and 26 that the 41 Sector Fiches are included in Annex to the Final Report, these fiches are not part of the consultant report that forms the basis for the public consultation.

The absence of these fiches makes it difficult for CEMBUREAU to provide meaningful and detailed input into the consultation as we do not have an insight into how the four main areas for analysis (market characteristics, profit margins, abatement potential and fuel and electricity substitutability) have been assessed.

We understand from discussions with the Commission services that these fiches will not be made publicly available until after the closing of the consultation period and that the Commission will carry out its own assessment of the eligibility criteria and compare these with the findings by the consultants.

III. INDIRECT COMPENSATION: RELEVANCE FOR THE CEMENT INDUSTRY

CEMBUREAU hereby reiterates a number of key characteristics for the sector which underline the importance to mitigate the impact of electricity costs on the overall cost structure for the industry.

- ✓ While the indirect emissions account for around 11% of total CO_2 emissions of the cement sector, the "cement, lime and plaster" sector has the highest share of energy costs in total production costs (see Annex I[1]) and electricity costs in the EU represent more than 50% of total energy cost and this is higher than in other jurisdictions see (see Annex II[2]); we do acknowledge that the percentage of electricity costs in the overall production cost differs from Member State to Member State and understand that this element will be taken into account for determining the amount of aid for eligible sects; we nevertheless find it relevant to point to the impact on the cost structure especially since the cement business is a low-margin business and this item is of direct relevance for the discussion on profit margins in the industry;

---

1 Presentation DG Energy, European Commission, "Energy Prices and costs in Europe 2018", presented at the Refining Forum, 25th April 2019.

2 "Competitiveness of the European Cement and Lime Sectors", Report by Ecorys and WIFO for the European Commission, December 2017.

- ✓ The Draft Guidelines correctly state that there is a risk of carbon leakage "*either because production is transferred from the Union to other countries with lower ambition for emission reduction, or because Union products are replaced by more carbon-intensive products*". In this respect, it is worth mentioning that a capacity build-up of 70 million tonnes is forecasted in areas bordering the European Union over the 2018-2025 period (see Annex III). While capacity build-up does not equal exports to Europe, this development needs to be considered in combination with a change in business model witnessed in the industry whereby clinker manufacturing (the most CO_2 intensive part of cement manufacturing) is done in areas bordering the EU and brought to grinding installations in Europe where clinker is ground into cement which is then further transported across Europe. CEMBUREAU points out that the consultant's report, in identifying examples of carbon leakage actually happening, only provides to one case and that is the Gador plant from CEMEX in Spain[3]; this confirms that the cement sector is one of the sectors most at risk of carbon leakage (Annex IV);
- ✓ The Draft Guidelines do refer to the Green Deal as the context in which indirect compensation needs to be considered. The decarbonisation of energy intensive sectors will entail an increasing demand in electricity, as set out in the Masterplan developed in the High-Level Group for energy intensive industries[4]. See the item below for more details about the cement sector.

IV. ELECTRIFICATION AND THE CEMENT INDUSTRY

For energy-intensive sectors, higher electricity demand and therefore cost is usually associated with the electrification of the sectors. In the cement sector, most of the CO_2 emissions (66% of total CO_2 emissions) are process-related.

Electrification efforts in the industry are in an early stage of research and development The technologies under study are:

- **Plasma** is a fundamental state of matter that occurs when a gas is heated sufficiently to form an ionized gas. Temperatures between 3000 and 5000 ºC can be obtained.
- **Electrical flow heaters** whereby heat is generated by running a current through a resistant element, which is usually protected by a shroud, and transferred to a gas flow through high-velocity convection. Maximum gas outlet temperatures of 1100–1200°C are quoted.
- **Microwave heating**
- **Resistive electrical heating**
- **Induction heating**.

Cementa and Vattenfall run a joint project (CemZero) with the aim to check the technical feasibility to electrify the cement production process. Different technologies have been tested, to be verified in larger scale tests.

Hydrogen combustion: providing the heat for the cement production process through combustion of hydrogen generated through electrolysis of water may be considered as an electrification of the production process. Hydrogen as a fuel is characterized by very wide flammability limits, high burning velocity and a quite high adiabatic flame temperature. The application of hydrogen as a fuel in a cement plant would require extensive testing and, most probably, modifications of kilns and the clinker burning process. Challenges of these are handling problems (e.g. risk of explosion), effects on heat transfer (temperature profile inside kiln, radiative characteristics) and possible impact on product quality.

An **increased electricity demand**, however, will result from the decarbonisation, efforts in the cement manufacturing process, including the development of carbon capture projects, the increased

---

3 p. 24 of the Consultant Report, footnote 11.

4 Masterplan for a competitive transformation of EU energy-intensive industries enabling a climate-neutral, circular economy by 2050, p. 39, mentioning an electricity demand for energy intensive industries between 2,980 TWH and 4,430 TwH.

recourse to alternative fuels and for grinding of alternative raw materials or cements of higher fineness[5].

- In the European Union, the cement industry now draws 46% on average of its fuel needs from alternative fuels to replace fossil fuels; this is an increase from 2% in 1990 and there are no technical impediments to increase to 95% -100%; the barriers are regulatory in nature (permitting public acceptance, no landfill ban on waste) but also the electricity cost plays a role which means that individual plants reaching high levels of fuel substitution are located in areas where electricity prices are relatively low;
- The cement industry is currently involved in demonstration and pilot carbon capture projects whereby the purification of the CO_2 stream from 25%-30% in a current kiln to 100% (required for capture) happens through membrane or calcium looping technologies or through amine adsorption. All of these processes require twice as much energy costs (50% of which is electricity cost) compared to current processes (6 GJ/t clinker instead of 3 GJ/t clinker). For CCS/CCU technology, an increase in power consumption at plant level is estimated between 50% and 120%[6] .
- Roughly speaking, 120 million tonnes of clinker, which is the current EU production, requires 3 GJ/t clinker thermal energy consumption. If we were to convert the thermal energy need in electrical energy demand, we would need 120 TWhr of electrical energy consumption for the current kilns. When the industry opts for CO_2 purifying amine solutions, the total energy demand would increase to 200-250 TWhr of electrical consumption for the production of 120 million tonnes of clinker.

For further investment in technologies or already existing business applications referred to above, companies include the cost of electricity in their return on investment calculation.

V. RED-AMBER-GREEN (RAG) ANALYSIS TO DETERMINE THE RISK OF INDIRECT CARBON LEAKAGE

CEMBUREAU was surprised to note a “medium-low” qualification under the Red-Amber-Green (RAG) assessment carried out by the consultants. While each of the criteria for the assessment have been discussed in detail in CEMBUREAU’s submission filed with the European Commission in April, we do wish to highlight a few core arguments for each of the criteria as the rating received does not correspond to our own assessment. This is precisely the reason why access to the sectoral fiches is indispensable as it would provide useful insights into the assessment made by the consultants based on our submission.

a. Market characteristic parameters

- ✓ Input prices have gone down at a slightly faster pace than output prices over 2012-2016, mostly driven by lower prices of energy/kg
- ✓ the domestic output price index decreased faster than the non-domestic index over 2014-2016 which suggests strong price competition;
- ✓ prices evolve more slowly than costs because of the limited pricing power of the industry in the EU (for these three points, see Annex VI;
- ✓ pricing power is constrained both by competition from third countries and by the fact that cement only represents 20% of the construction sector purchases even though more than 70% of cement is destined for the construction sector
- ✓ cost-pass through in the cement industry is limited due to the following factors:
  - (i) cement is a homogeneous product traded in both local and international markets, facing commodity pricing;
  - (ii) strong price elasticity, especially in markets bordering the EU;
  - (iii) long downward demand cycles hinder any price increase
  - (iv) destination markets are not likely to apply equivalent environmental measures to those in the EU on a sectoral level

---

5 European Cement Research Academy (ECRA), Technology Papers, p. 138 (Annex V).

6 Ibidem, p. 12. (Annex V)

- ✓ See Annex VII for excerpts from a PwC literature study done for CEMBUREAU on cost pass through in the cement sector also demonstrating that the industry will still be facing strong competitive pressure from non-EU countries by 2030.

b. *Profit margin*

- ✓ the added value in the cement industry decreased by 7.8% per year between 2008 and 2016, faster than the turnover which led to a margin deterioration (see Annex VI);
- ✓ gross operating rate decreased by 11% between 2008 and 2012 and has remained at the same level since;
- ✓ many cement companies are still operating at a return on capital employed below the cost of capital;
- ✓ investments in the cement sector have halved since 2009, falling from EUR 2.1 bn (2009) to EUR 944 million (2016)
- ✓ At a CO_2 price of EUR 25, the cement industry's EBITDA threatens to be wiped out completely especially when no compensation for indirect costs is foreseen[7].
- ✓ see Annex VIII[8] showing the decrease in profitability in the cement sector for selected countries pre-crisis / post-crisis

c. *Abatement potential*

- ✓ Efforts made to improve energy efficiency in the cement manufacturing process have already resulted in a very high energy efficiency of between 70% and 80%, depending on the moisture content of the raw materials[9];
- ✓ The potential for a further decrease in electricity consumption through new techniques is limited given the unrealistically high cost of carbon required to reach break-even: by way of an example, reference is made in CEMBUREAU's submission to a EUR 385/t CO_2 carbon price for a preheater modification leading to a electricity consumption decrease of 5 KWh/t clinker; in addition, the pay-back time of more than 5 years is longer than the one anticipated by the European Commission in its para. 54(a) of Draft Guidelines when referring to the energy audit.

d. *Fuel and electricity substitution*

- ✓ The cement industry is increasingly moving away from fossil fuels: today, 46% of the industry's fuel needs are covered by alternative fuels taken from a variety of waste streams; while the shift from fossil fuels is not (yet) a massive shift to electrification, the need for electricity increases with a stronger recourse to alternative fuels.

Conclusion: given that there is no ability for the cement sector to pass on costs, the prospects for investment are worsening, further abatement potential is low (and even negative, due to increased electrification) and the industry is a price taker, the RAG analysis should have resulted in a higher ranking for the cement sector on the eligibility curve.

VI. SUGGESTION

In view of a qualitative assessment, CEMBUREAU suggests to allow for an approach whereby sectors are considered that

- have either a trade intensity of 20% **or** an indirect emission intensity above 1 kg CO_2/EUR
- and have a RAG rating of low-medium or medium.

---

7 Based on average production cost (ex factory, i.e. without transport costs) of EUR 55/t cement and a sales price of EUR 80 – EUR 85.

8 Report mentioned in footnote 2, p. 36.

9 Evaluation of the energy performance of cement kilns in the context of co-processing, European Cement Research Academy (ECRA), Technical Report A 2016/1039, p. 3.

Applying this criterion, would add six additional sectors to the list as follows:

NACE Code	Sector	Trade Intensity	Indirect emissions intensity	or TI (UE)*IEI(UE) >0,2 or IEI>1		RAG rating
24.44	Copper production	0,35	0,71	**0,251**	YES	**Medium**
20.60	Manufacture of man-made fibres	0,44	0,64	**0,281**	YES	Low-**medium**
20.16	Manufacture of plastics in primary forms	0,36	0,69	**0,247**	YES	**Medium**
08.99	Other mining and quarrying n.e.c.	1,73	0,25	**0,438**	YES	Low-**medium**
20.11	Manufacture of industrial gases	0,06	15,09	**0,905**	YES	Low-**medium**
23.51	Manufacture of cement	0,10	**1,33**	0,134	YES	Low-**medium**